

CLAIMS

WHAT IS CLAIMED IS:

1. A clip device for removably securing a tube to a bracket, said clip comprising:
an annular body having a first edge and a second edge, said body defining an opening for the removable reception therein of the tube, said body including a flexible arm having a proximal end and a distal end, one of said distal end of said arm and the bracket defining a tooth and the other of said distal end of said arm and the bracket including a mating structure adapted to lockingly cooperate with said tooth, the arrangement being such that, the tube is passed through said opening of said body and then, said body is further moved axially along the condenser so that the bracket extends into said opening and said body is then rotated about the tube until said tooth engages said associated mating structure, thereby removably securing the tube to the bracket.
2. A clip device as set forth in claim 1, wherein said body is fabricated from plastic material.
3. A clip device as set forth in claim 1, wherein said body has an external surface which defines a plurality of axially extending ribs for assisting rotation of said body relative to the tube.
4. A clip device as set forth in claim 1, wherein said opening of said body has a diameter which is slightly greater than a diameter of the tube to enhance the axial movement of the clip over the tube.
5. A clip device as set forth in claim 1, wherein said body further includes an internal surface which extends around a first portion of a periphery of said opening, and a relief having a first and a second end, said relief extending around a second portion of said periphery of said opening, said relief being adapted and configured to receive the bracket.

6. A clip device as set forth in claim 5, wherein said relief further includes a surface having a first and a second extremity, said surface extending from said first end of said relief towards said distal end of said arm, and a further camming surface which extends from said second extremity of said surface to said second end of said relief.

7. A clip device as set forth in claim 6, wherein said proximal end of said arm extends from said first end of said relief.

8. A clip device as set forth in claim 6, wherein said tooth is disposed on said arm and in a vicinity of said second extremity of said surface.

9. A clip device as set forth in claim 1, wherein said tooth is disposed on said arm and extends inwardly from said distal end of said arm towards the mating structure for removable engagement thereof when said body is rotated relative to the tube.

10. A clip device as set forth in claim 1, wherein said arm is disposed between said first and second edge of said body.

11. A clip device as set forth in claim 1, wherein said opening of said body is of an oval shaped configuration for accommodating tubes having various outside diameters.

12. A clip device for removably securing an air conditioning condenser tube to a radiator bracket of a radiator, said clip comprising:

an annular body having a first edge and a second edge and an opening extending therebetween for the removable reception therein of the condenser tube, said body including an internal surface which extends around a first portion of a periphery of said opening and a second portion which defines a first relief area having a first end, a second end and a surface therebetween, said second portion further defining a second relief area having a camming surface which extends between said second end of said surface and an end of the first portion, said body further including a flexible arm having a proximal end connected thereto and a distal end freely spaced therefrom, said arm being located within said second portion of said body such that said proximal end of said arm extends from said first end of said first relief area and said distal end of said arm is located near, but spaced from, said surface of said first relief area, said arm including a tooth extending inwardly from said distal end towards said internal surface, so that to secure the condenser tube to the bracket, said clip is positioned over the condenser tube such that said opening of said clip receives the condenser tube, thereafter, said clip is moved axially along the condenser tube until the bracket slides within said first relief area of said clip, said clip being configured to be rotatable about the tube so as to allow the bracket to slide within said first relief area, once the bracket is received by said first relief area, said clip is caused to rotate so that the bracket engages and passes over said camming surface of said second relief area, as said clip is so rotated, said flexible arm is caused to pass over a portion of the bracket until said tooth snaps into a slot found in the bracket thereby securing the condenser tube to the bracket, once secured, at least a portion of the bracket is engages said camming surface of said second relief area of said clip.

13. A clip device as set forth in claim 12, wherein said body is made of a plastic material.

14. A clip device as set forth in claim 12, wherein said body has an external surface which defines a plurality of axially extending ribs for assisting rotation of said body relative to the condenser.

15. A clip device as set forth in claim 12, wherein said opening of said body has a diameter that is slightly greater than a diameter of the condenser tube to enhance the axial movement of the clip over the tube.

16. A clip device as set forth in claim 12, wherein said opening of said body is of an oval shaped configuration for accomodating condenser tubes having varying outside diameters.

17. A clip device as set forth in claim 12, wherein said body includes a cut out portion wherein said flexible arm is located, said cut out portion including a slot on each side of said flexible arm to allow a tool to be inserted therein so as to be able to move or pry said flexible arm away from the bracket to cause said tooth to be disengaged from the slot in the bracket, thereby releasing said clip from the bracket to allow the condenser tube to be disengaged from the bracket.